AFCP

Advanced Fuel Cycle Programme

NATIONAL NUCLEAR LABORATORY

Fuelling Net Zero by establishing world-leading research and innovation infrastructure

Through investment in key UK facilities, technologies and skills, AFCP is equipping the nation to deploy sustainable energy innovation. Whether leveraging existing facilities or building new capability, we are fortifying the globally-competitive research and innovation infrastructure essential to elevate UK nuclear expertise and achieve a clean energy future.

Using and unifying
20 UK FACILITIES

Delivering
10 NEW CAPABILITIES
in the UK

Directing
SIGNFICANT INVESTMENT
to accelerate domestic capability

Establishing the UK as a global hub for nuclear innovation

Empowering a world-leading platform for the technologies of tomorrow

Developing state-of-the-art infrastructure to support clean energy innovation

http://afcp.nnl.co.uk

Part of the Department for Business, Energy and Industrial Strategys (BEIS) £505m Energy Innovation Programme (EIP)

Department for Business, Energy & Industrial Strategy

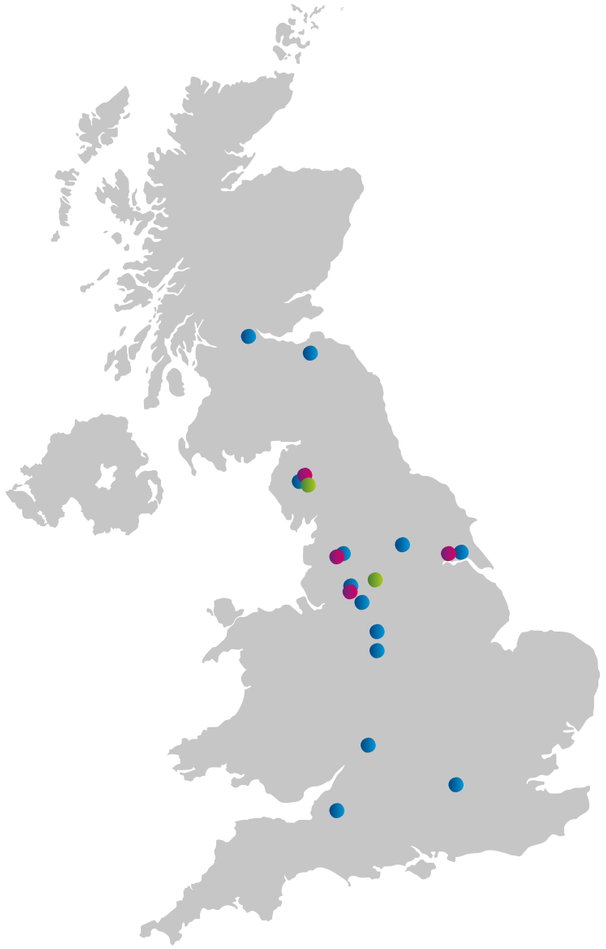
Enabling Britain to maintain advanced energy innovation

Key

In operation and used in current AFCP

New capability ready by March 2021

Design/safety case ready by March 2021



Unifying and elevating essential UK infrastructure to reach new clean energy heights

Industry

Supporting a range of UK businesses to further expand and deploy domestic expertise

National laboratories

Coordinating a team of leading UK scientists to develop crosscutting clean energy technologies

Academia

Connecting world-class research capability to pioneer the innovation of tomorrow

For more stories about AFCP's infrastructure, visit:
https://afcp.nnl.co.uk/casestudy-category/world-class-facilities/

National Nuclear Laboratory

Leveraging national nuclear leadership

Bridging nascent technologies and industry-ready solutions, the UK National Nuclear Laboratory (NNL) operates at the core of AFCP's nuclear family. With established energy expertise and world-class laboratories, NNL lends critical infrastructure that underpins ambitious UK fuel cycle innovation.

NNL maintains the most advanced nuclear facilities in the world. AFCP taps into NNL's cross-UK capability, using and modernising a range of infrastructure that is critical for actualising the UK's Net Zero ambition.

Through AFCP, NNL is also opening its doors to wider R&D collaborators. Following the success of AFCP's first call to academics to use NNL facilities, AFCP is paving the way for teams across the UK to benefit from NNL's unique infrastructure.

NNL enables AFCP partners to reach new elevations of nuclear knowledge. AFCP not only leverages NNL's legacy to drive the UK nuclear renaissance, but ensures that as a national laboratory, NNL is sustainably equipped to continue securing clean energy solutions for Britain's evolving low-carbon landscape.

At NNL, AFCP is supporting

Read more:
https://afcp.nnl.co.uk/casestudy-category/nnl

Henry Royce Institute

Materialising the technologies of tomorrow

As the world-leading centre for advanced materials research and commercialisation, the Henry Royce Institute (Royce) provides integral insight for UK advanced nuclear deployment. Complementing the institute's ultramodern facilities, AFCP's additional infrastructure investment will help steer the direction of domestic fuel manufacture.

AFCP's addition of a bespoke, active manufacturing rig at the institute will allow academics to study the manufacture of TRISO fuel - a key technology for advanced reactor systems – with greater depth than previously capable in the UK. AFCP is equipping the Henry Royce Institute to fill national knowledge gaps, accelerate commercial innovation and strengthen the UK's world-class R&D framework.

At Royce, AFCP is supporting

Read more:
https://afcp.nnl.co.uk/casestudy-category/henry-royce-institute/

NATIONAL NUCLEAR LABORATORY

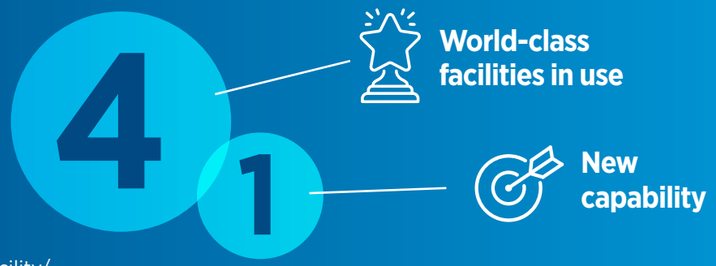
National Nuclear User Facility

Upholding strategic industrial aims

Established to support the Government Nuclear Industrial Strategy, the National Nuclear User Facility (NNUF) provides state-of-the-art experimental facilities to help secure the UK's nuclear future. Leveraging NNUF infrastructure across its nationwide sites, AFCP works jointly with the University of Manchester Dalton Cumbrian Facility, the University of Edinburgh, Lancaster University and Jacobs.

The current NNUF network empowers AFCP fuel cycle innovation, while programme investment is establishing an additional Lancaster lab design to expand future NNUF capability. Together, interconnecting NNUF sites across AFCP technical workstreams accelerates the industrial potential of advanced nuclear technologies.

At NNUF, AFCP is supporting



Read more:
https://afcp.nnl.co.uk/casestudy-category/national-nuclear-user-facility/

Nuclear Fuel Centre of Excellence

Extending advanced fuel expertise

With sites at NNL's Springfields Laboratory and the University of Manchester, the Nuclear Fuel Centre of Excellence (NFCE) unifies top UK talent to resolve national clean energy security and establish a high-value nuclear economy. AFCP not only draws on the unique facilities of both sites, but lays the foundation for how NFCE will further evolve to support the nation's growing advanced nuclear fuel demand.

AFCP links NFCE with industry, academia and national laboratory to carry university-scale research to pilot-scale facilities. With several new NFCE capabilities underway by 2021, AFCP positions NFCE to continue representing UK nuclear fuel excellence into 2050 and beyond.

At NFCE, AFCP is supporting

Read more:
https://afcp.nnl.co.uk/casestudy-category/nuclear-fuel-centre-of-excellence/

For more stories about AFCP's infrastructure, visit:
https://afcp.nnl.co.uk/casestudy-category/world-class-facilities/

Championing infrastructure investment to achieve sustainable new horizons

Sustainable skills

> "AFCP is providing funding for research staff to perform cutting-edge, novel science with current NFCE capability, whilst also helping maintain the specialist skills and knowledge required to utilise the facility to its fullest potential."

Rob Harrison, Research Fellow, University of Manchester Nuclear Fuel Centre of Excellence (NFCE)

Multidisciplinary talent

> "AFCP supports NPL efforts towards green energy projects for the future, developing a safe and reliable energy infrastructure for the UK. Working with NNL allows leading UK scientists to develop UK nuclear energy technology for future decades."

Andy Duncan, Account Manager, National Physical Laboratory (NPL)

Unique R&D opportunity

> "AFCP is providing novel PhD research by enabling access to state-of-the-art equipment. Our nuclear data work will contribute to the safe and efficient operation of nuclear power stations now and in the future to help the UK reach Net Zero by 2050."

Robin Smith, Lecturer in Physics, Sheffield Hallam University

Constructing national capability to power Net Zero

NATIONAL NUCLEAR LABORATORY

ADVANCED FUEL CYCLE PROGRAMME

Advanced fuels

Pioneering UK-made, globally-deployed next generation nuclear fuels to combat climate change

Advanced recycling and sustainability

Reusing valuable resources to increase sustainability and minimise the environmental footprint of nuclear energy

Delivered by over 90 UK organisations

Securing, maintaining and renewing the skills and experience needed to ensure that nuclear can continue to play a part in delivering secure, low-carbon energy in the global market and Net Zero future.